***Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per:\_\_\_\_\_\_***

CW/HW #104: Intro to Trig WORD PROBLEMS

Due Monday, 23 February 2015

***Anything not finished in class becomes homework****!*

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| **CRS** | FUN 502 Express sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths; FUN 602 – Apply basic trigonometric ratios to solve right triangle problems |
| **Objective** | 10.4 Write a ratio for sine, cosine, and tangent when side lengths are variables or number values given a figure, given a word problem, given one of the side length ratios;  -> given the angle measure and one side length of a right triangle, find the side length of the triangle |

**DO NOW ~ Review: use the correct Trig ratio to find x in each triangle. Show your work!**

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| Write the acronym to remember the trig ratios: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Below, write out the 3 ratios: | | |
| = | = | = |
| 1) | 2) | 3) |
| 4) | 5) | 6) |

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| 1. A railroad crossing arm that is 20 feet long is stuck with an angle of elevation of 35° Find the lengths *x* and *y.* | 1. Find the height *h* of the lighthouse to the nearest foot. |
| 1. You are traveling along a stretch of highway that has a slight grade with an angle of inclination of 5°. After traveling for 4 miles, what is the vertical v and horizontal h change in feet? (1 mi = 5280 ft). Round your answer to the nearest foot. | 1. You lean a 16 foot ladder against the wall. If the ladder makes an angle of 70° with the ground, how far away from the wall is the base of the ladder? Round to the nearest tenth of a foot. |
| 1. You walk from one corner of a basketball court to the opposite corner. Write and solve a proportion using a trigonometric ratio to approximate the distance of the walk. | 1. To calculate the height h of a flagpole, you move 22 feet from the base and record the angle of elevation to the top to be 65°. Find the flagpole's height to the nearest foot. |
| 1. A wire is tied from the top of a 50 foot pole to a point on the ground, 15 feet away from the pole. If , what is the length of the wire? | 1. A lamppost, shown below, casts a 10ft. shadow when the sun is at a 60° angle with the ground. What is the height of the lamppost? |

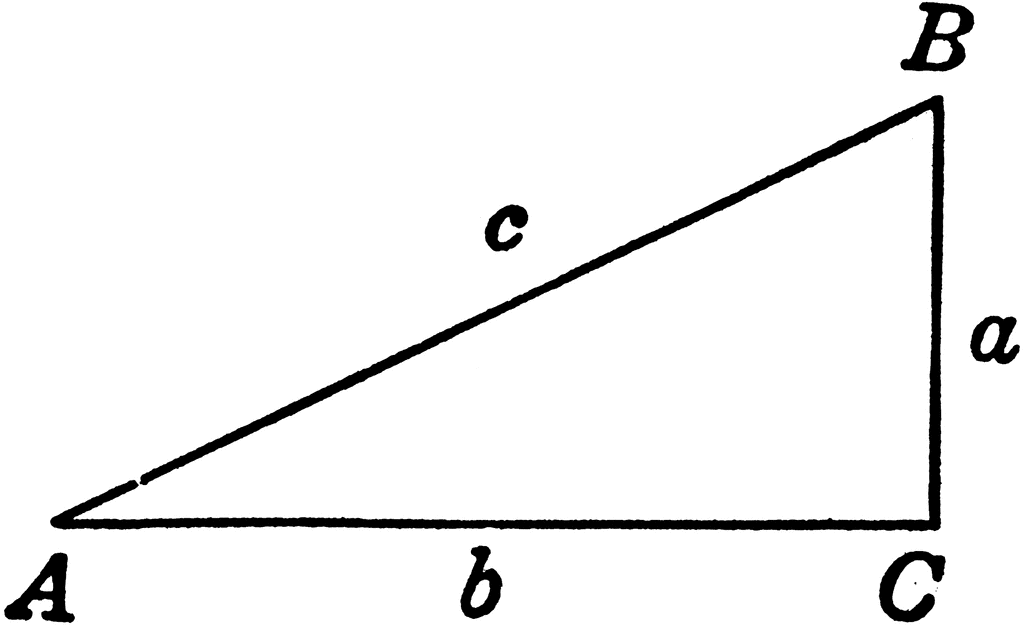
***Critical Thinking:*** *what mathematic concept would you use to find a missing side within the triangles below?*

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| 1. http://www.testpakstars.com/files/geo2010/Geom_10L_Fig18.jpgConcept needed to solve:   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Solve:**  8 14    ***x*** | 1. http://www.testpakstars.com/files/geo2010/Geom_10L_Fig18.jpghttp://www.testpakstars.com/files/geo2010/Geom_10L_Fig18.jpgConcept needed to solve:   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Solve:**  8    35°  ***x*** |

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| Yesterday’s Homework asked you this question: *An angle in a right triangle has a measure. If* ***tan =****, then sin= ?*  You can solve this using the Pythagorean Theorem (like in #11 above). However, if you knew that 8-15-17 triangles were a type of ***special right triangle*** known as a***Pythagorean Triple****,* you wouldn’t have to!  http://4.bp.blogspot.com/_TUpdoZ6zT7Y/TVBERzu_KMI/AAAAAAAAACQ/byizB4hALCc/s1600/Pythagorean+triples+Diagram.jpeg***Pythagorean Triples*** are right triangles that have sides that are **all integers** (no decimals). See how this helps solve:  ϴ  Because , I know that 8 & 15 have to be \_\_\_\_\_\_\_\_\_\_ of a right triangle.  Since I know that 8-15-17 is a Pythagorean Triple (and that the longest side has to be the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), I can simply write in 17 for the missing side.  Since , I know that without ever having to calculate the measure of Θ or having to use the Pythagorean Theorem to calculate the missing side first. |
| **Write out the first four Pythagorean Triples based on the picture below:**  http://4.bp.blogspot.com/_TUpdoZ6zT7Y/TVBERzu_KMI/AAAAAAAAACQ/byizB4hALCc/s1600/Pythagorean+triples+Diagram.jpeg  (1) **3, 4, 5** (2) \_\_\_, \_\_\_, \_\_\_ (3) \_\_\_, \_\_\_, \_\_\_ (2) \_\_\_, \_\_\_, \_\_\_  *You should memorize these! (At least the first two)*  Remember: the longest side is always the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Pythagorean Triples & Trigonometry**

**(1) Label the information you know from the starting ratio and circle the starting angle, (2) write in the information you know from the Pythagorean Triples, and (3) find the remaining two ratios.**

Given: , fill in the measure of side ***c*** to solve:

1. What is ?

**=5**

1. . What is cos A?

**=12**

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| 1. **If , find *cos A* and *tan A.***   **http://etc.usf.edu/clipart/36500/36521/tri11_36521_lg.gif** | 1. **If , find *sin B* and *cos B.***   **http://etc.usf.edu/clipart/36500/36521/tri11_36521_lg.gif** |

***Be on the lookout for more Pythagorean Triples problems below! Write “TRIPLE!” next to these.***

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| 1. You are at the top of a roller coaster 100 feet above the ground. The angle of depression is 44°. About how far do you ride down the hill | 1. If in a right triangle  and , then x = ? (Draw out & justify your answer)   A. 1  B. 7  C. 12  D. 144  E. Cannot be determined from given information |
| 1. Find the perimeter of the triangle. Round to the nearest tenth. | 1. A staircase has an angle of eleveation of 28° and covers a total distance of 17ft. Find the height h of the staircase to the nearest foot. |
| http://bp3.blogger.com/_T2izeGoDICc/R-sDsQntREI/AAAAAAAAADM/zb7yHDUXToI/s320/Pythagoras+Part+4.bmp | 1. In the figure below, ABC is a right triangle with a right angle at C. Which of the statements about this figure is NOT correct?  1. sin A =   A  B  C  6  8   1. cos A = 2. cos B = 3. tan A = 4. tan B = |

**Spiraled Review. Show your work; don’t just circle an answer!** *(Unless you like LaSalle… then do what you want!)*

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| 1. Write an equation of the line that passes through (–1, 2) and is parallel to the line y = 5x + 4 | 1. Write an equation of the line perpendicular to the graph of 2x + 3y = 7 at point (2, 1)? |
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